



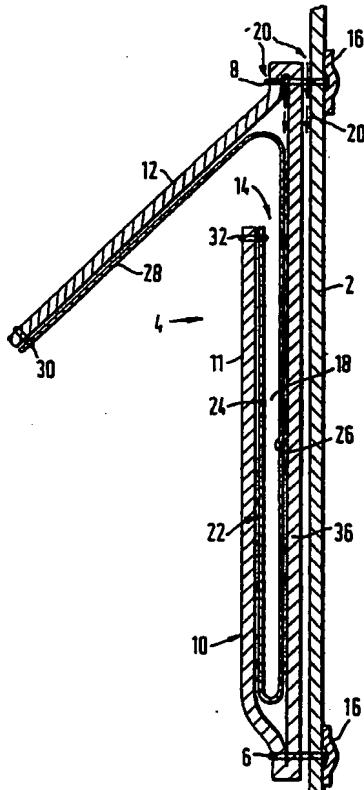
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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## (54) Title: POCKETS

## (57) Abstract

A waterproof pocket comprises a pocket bag (10) the opening (14) of which is covered by a main flap (12). A waterproof lining (22) is disposed within the pocket bag and itself has a flap extension (28) disposed face-to-face with the flap (12) so as to prevent water leaking through the stitching (8) connecting the main flap (12) to the article surface (2) from reaching the interior (18) of the pocket.



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POCKETS

This invention relates to pockets, and in particular to stitched pockets. The invention is particularly applicable to pockets of garments, but is 5 also applicable to pockets used on other articles such as luggage (e.g. rucksacks).

It is desirable in many circumstances to make the pockets waterproof. Some garments which have pockets affixed by welding of material such as PVC achieve 10 this, but stitched outer pockets of garments are not generally leak-proof. Some degree of protection is attempted by providing pockets with zip fastenings or flaps extending over the pocket openings, but leakage into the pockets still occurs.

15 Various aspects of the present invention are intended to solve or at least mitigate this problem.

According to one aspect of the invention, there is provided an article having a pocket comprising:

20 a flap attached to a surface of the article; a front pocket wall attached to the surface below the flap so that the flap covers an upper pocket entry between the front wall and the article surface; and a waterproof lining disposed between the front pocket wall and the surface and having a flap 25 extension disposed under the flap and attached to the

flap at a position below the upper pocket entry, so that water penetrating under the flap at its point of attachment to the article surface is prevented from entering the pocket by the lining.

5        In prior art stitched pockets, water can leak into the pocket via stitch holes, for example along the top of a flap positioned above the opening of the pocket, or at the sides of a zip provided at the pocket opening. By using an inner lining having a  
10      flap extension which covers the stitching attaching the main flap to the garment, any leakage which occurs will not enter the pocket so this problem is avoided.

15      In an alternative aspect of the invention, the pocket is formed by a lining inserted into a garment, except for a flap extension which projects outwardly of the garment. In this case, the top region of the flap extension is attached to the garment by stitching, but additional measures are taken to prevent leakage through the stitch holes at this  
20      region, e.g. by waterproofing the area with tape.

25      In accordance with a further aspect of the invention, an article has a pocket which is taped on its inside surface in the region of stitching in order to prevent the ingress of water through the stitch holes. Preferably, there is a first line of stitching which attaches the pocket to the article, and a second

line, within the first line, which defines the inner pocket area, and the tape extends around the inside along the second line of stitching. However, there may be a single line of stitching for attaching the 5 pocket to the article, with the tape extending around the inside along this line. In both arrangements, there is preferably a flap covering the opening of the pocket, the flap possibly being formed by an extension of the rear part of the pocket. The flap is 10 preferably secured along its top edge to the article, and preferably has tape extending along its underside in the region of the stitching used to attach it to the article so as to prevent water leakage through the stitch holes.

15 Arrangements embodying the invention will now be described by way of example with reference to the accompanying schematic drawings, wherein like reference numerals represent like components, and in which:

20 Figures 1(A) and (B) show a prior art pocket attached to a garment;

Figures 2(A) and (B) show a pocket according to the present invention;

25 Figures 3(A) and (B), 4, 5 and 6 show modified versions of the embodiment;

Figures 7(A) and (B) show a further embodiment of

the invention;

Figure 8 shows another embodiment of the invention; and

Figures 9(A) and (B) and Figures 10(A) and (B) 5 show different types of pockets, constituting modifications of the embodiment of Figures 2(A) and (B), to which the principles of the present invention can be applied.

Figure 1(A) shows a layer 2 of a garment (or 10 other article), the layer being made of waterproof material. The garment may have a single layer, or may be multi-layered in which case the layer 2 is the outermost layer. The front surface of the layer 2 has a pocket generally indicated at 4 attached thereto. 15 The pocket is shown in front elevation in Figure 1(B), which also shows the stitch lines 6 and 8 by which a main body 10 and a flap 12 are attached to the layer 2. The main body 10 comprises a front pocket wall 11 which is generally rectangular, and has stitching 20 around its bottom and its side edges, the margins of which are folded over as shown in Figure 1(A). The flap 12 covers the pocket opening 14, and is stitched to the layer 2 along its upper edge (the flap 12 is shown turned up in Figure 1(B)).

25 Wherever the stitching penetrates the layer 12, a waterproof tape 16 is attached to the inner surface

of the layer 2 to prevent penetration of water through the stitch holes and thus ensure that the garment remains waterproof. The tape may be melted on to the back of each row of stitching by hot air.

5        However, water is able to penetrate the interior 18 of the main pocket area by leakage through the stitching as shown by the small arrows such as those indicated at 20 in Figures 1(A) and 1(B). It will be noted that water can leak down behind the top of the 10 flap 12, and can also penetrate from the front and rear of the flap 12 to the area inside the folded top flap margin. In both cases water can leak down into the inside 18 of the pocket. Water can also penetrate the side areas of the main pocket body 10.

15        Generally, the waterproof materials used for the layer 2 of the garment (and for the flap 12 and pocket body 10, which are preferably made of the same material) are such that waterproof tape 16 can only be attached to the rear, and not to the front of the 20 garment. Accordingly it is not possible to prevent the above-mentioned leakage by the use of tape attached to the front surface, and in any event this would produce an unsightly appearance.

25        It would be possible for the pocket to have a rear wall which extends upwardly such that the flap 12 becomes an extension of the rear wall. However,

although this would allow some of the water (20') penetrating behind the flap to pass down between the front of the garment and the pocket without penetrating to the interior 18 of the pocket, this 5 does not prevent the rest of the water leaking into the pocket.

Referring to the longitudinal section and elevation views of Figures 2(A) and 2(B) respectively, in accordance with a first embodiment of the present 10 invention the pocket is provided with an inner waterproof liner 22. This has front and rear sections 24 and 26, respectively. These may be attached together at a line shown at 27 in Figure 2(B), possibly by welding or by stitching, in the latter 15 case with a waterproof tape extending around the stitch line. The rear section 26 is integral with a flap extension 28 (although this may be separately formed and joined thereto using tape). This is positioned face-to-face with the flap 12. The inner 20 pocket 22 is attached to the garment by stitching to the flap 12 along the line 30 and by stitching of the front section 24 along the line 32. It will be noted that the flap extension 28 prevents the ingress of water leaking through the top section of the flap 12. 25 Although water can penetrate through the stitch holes where the inner liner 22 is attached to the rest of

the garment, the line 30 of stitching to the flap 12 is mainly positioned below the entry 14, so that any leakage cannot reach the interior 18 of the pocket. There is no line of attachment along the fold area 5 above the pocket entry 14 at the top of the flap extension 28, so avoiding any leakage through stitch holes along this line. The other line of attachment is along the top of the front section 24, which is protected by the flap extension 28. Sideways ingress 10 of water through stitching 6 is also prevented from reaching the interior 18. There is thus provided a fully waterproof pocket.

Figures 3(A) and 3(B) are respectively longitudinal section and elevation views of a variant 15 which provides a slightly greater degree of protection, and includes a lower flap section 34 formed by folded-over integral extensions 34' and 34" of the front 11 of the main body 10 of the pocket and the front section 24 of the inner liner. The side 20 edges (not shown) of the extension 34' of the front wall 11 are attached to the side edges of the flap 12, and the side edges of the extension 34" are attached to the flap extension 28, so that a mouth-like structure is formed as indicated in Figure 3(B). It 25 will be noted that the stitch line 32 at which the front section 24 is affixed to the garment is

positioned at the bottom of the lower flap section 34 below the entry 14, so that any moisture which happens to penetrate via these stitch holes would not reach the interior 18 of the pocket.

5 In both these embodiments the main body 10 of the pocket has a rear wall 36, and the front wall 11 and flap 12 are integral with this rear wall. However, this is not essential.

Figures 4 and 5 show further variants of this 10 embodiment, the thicknesses of the various layers in these cases (and in Figures 6, 8, 9(B) and 10(B)) being shown by single lines for simplicity. For clarity, parts are shown separated even when in reality they would be in contact or adhered together.

15 Figure 4 shows a modification of the embodiment of Figures 3(A) and (B), wherein the continuous rear wall 36 is omitted, and a shortened back section 38 is provided. Figure 5 shows a different variant, in which the outer flap 12, the upper flap extension 28 of the inner liner 22 and the lower flap section 34 are all sewn together at their lowermost ends, as shown at 33, and a zip 40 is provided in the lower flap section 34 for permitting access to the pocket without allowing water to reach the pocket interior 18. Such modifications can also be applied to other 20 25 embodiments of the invention.

Figure 6 shows a further embodiment wherein the pocket comprises an inserted pocket bag accessed by an aperture 14 in the garment layer 2. It will be noted that the front wall of the pocket is thus formed by 5 the layer 2 itself, rather than a separate section attached thereto. In this case, because the rear section 26 of the liner 22 is also the rear wall of the pocket, it is desirable that it be attached to the garment along its upper edge as shown generally at 42. 10 This is achieved by stitching 44, with a layer of tape 46 being provided to prevent water leakage into the interior 18 of the pocket.

As mentioned above, the types of materials generally used do not permit waterproof tape to be 15 applied to opposed surfaces of the material. Accordingly, it may not be possible to use tape on the reverse of the rear section 26 to seal the line of stitching 44. Accordingly, water may penetrate the layer 2 via the stitching 8 of the flap 12 and then 20 via the stitching 44. This embodiment is therefore of most value when used with articles in which the layer 2 is an outer layer, which is not necessarily waterproof, the article further comprising a waterproof layer 56. This may be the inner layer of 25 a two layer structure, or an intermediate layer sandwiched between the outer layer 2 and an inner

layer 58. It will thus be noted that a waterproof pocket can be provided even when the outer layer of the garment is not made of waterproof material. It is also to be noted that any of the other embodiments may 5 be applied to such multi-layer articles.

Figures 7(A) and 7(B) show an alternative embodiment, in which a patch pocket is attached to a layer 2 generally as in the embodiment of Figures 2(A) and 2(B), except that the inner liner 22 is omitted. 10 Water leaking behind the top of the flap 12 passes down behind the continuous rear wall 36 of the pocket and therefore does not leak into the interior of the pocket. Water is prevented from leaking through the top of the flap 12 to the interior 18 by the use of a 15 waterproof tape 48 attached to the underside of the flap 12 and the top of the rear wall 36 along the line of stitching 8. The pocket is attached to the garment by stitching 50, which would permit water penetration. However, an inner line of stitching 52 is provided, 20 and a tape 54 extends around the interior of the pocket along this inner line of stitching 52 so as to prevent water ingress. The easiest way of providing this tape is to apply it to the pocket while this is turned inside-out, and then to turn the pocket the 25 right way before attaching it to the garment.

There is sufficient space between the inner and

outer lines of stitching 52 and 50 to allow a fastening means 55 (such as part of a hook and loop fabric fastener) to be attached to the pocket in this region to permit the flap 12 to be fastened down.

5 This prevents possible leakage due to attachment of the fastening means.

The stitching 52 could be omitted and the tape attached around the line 50 of stitching, although in practice this is more difficult to achieve because the

10 pocket has to be turned inside out while attached to the garment.

Although in this case the front (11) and rear (36) walls are formed from separate pieces of material, they could be formed from a single piece,

15 folded for example along the bottom of the pocket.

The embodiment illustrated in Figure 8 is similar to that of Figure 3 except for the following aspects. In this case, the flap extension 28 is no longer integral with the rear section 28 of the liner 22.

20 Also, the top margins of the flap extension 28 and the rear section 26 are both attached to the layer 2, desirably by using the same stitching 8 as is used to attach the top of the flap 12 to the layer. A waterproof tape 59 attached along the line of stitching 8 under the flap 12 to the flap extension 28

25 and the rear extension 26 prevents ingress of water

into the interior 18 of the pocket.

This embodiment also omits the rear wall 36 of the main pocket body 10, although the wall could be provided if desired.

5       In the embodiments of Figures 2 to 5, the rear section 26 and flap extension 28 of the inner liner formed a continuous impermeable barrier to moisture because they were not stitched to the garment. Figure 8 shows that such stitching is possible where there is  
10      an impermeable rear surface (in this case the section 26), to which a tape can be adhered to cover the line of stitching, just as in the embodiment of Figure 7 wherein the rear wall 36 of the main body section 10 provides a surface permitting the tape 48 to be  
15      adhered over the line of stitching.

Any of the pockets described above may have an additional space which is not waterproof and which serves as a hand warmer. For example, in a modification of the embodiment of Figures 2(A) and 2(B), the space 61 may be behind the rear wall 36 as shown in Figures 9(A) and 9(B), access being gained by leaving one edge 62 of the pocket unstitched. Alternatively, a zip may be provided. A further modification is shown in Figures 10(A) and 10(B), in which the space 63 is provided between the front of the pocket and an additional layer 64, access being  
20  
25

gained via a side entry 66 which may also have a zip.

Using the techniques of the present invention, there is considerable freedom in the design of the pocket, e.g. bellows, pleated, etc., types of pockets 5 can be used. The material forming the inner pocket can be anything which is waterproof and which can be sealed at the edges, and therefore could be substantially cheaper than the main outer fabric of the garment. Thermally insulated material for the 10 hands could be stitched inside the pocket, e.g. in the form of a hanging bag, and would stay dry. Normally fleecy or other such insulating materials are not used in outer pockets of rainwear as they merely become saturated. Because the pockets may be stitched-on 15 rather than welded, they are significantly stronger.

Although reference is made above to sealing stitch areas with lengths of tape, other possibilities such as doping, (e.g. using liquid polyurethane) or welding could be used.

20 The waterproof materials used to form a garment may be made from nylon, polyester, polycotton, cotton or many other materials. The material used to waterproof the article could be, for example, polyurethane, PTFE, PVC, neoprene or wax.

25 Although the upper openings 14 of the pockets described above are horizontal, they could instead be inclined.

**CLAIMS:**

1. An article having a pocket comprising:
  - a flap (12) attached to a surface (2) of the article;
  - 5 a front pocket wall (11) attached to the surface (2) below the flap (12) so that the flap (12) covers an upper pocket entry (14) between the front wall (12) and the article surface (2); and
  - 10 a waterproof lining (22) disposed between the front pocket wall (11) and the surface (2) and having a flap extension (28) disposed under the flap (12) and attached to the flap (12) at a position below the upper pocket entry (14), so that water penetrating under the flap (12) at its point of attachment to the article surface (2) is prevented from entering the pocket by the lining.
  - 15
2. An article as claimed in claim 1, wherein the lining (22) is unattached to the surface (2) along the top of the flap extension (28) which is disposed above the pocket entry (14).
- 20
3. An article as claimed in claim 1, wherein the lining (22) is attached to the surface (2) along the top of the flap extension (28) disposed above the

5 pocket entry (14), means (59) being provided for waterproofing the line (8) of attachment.

4. An article as claimed in any preceding claim, wherein the front pocket wall (11) has a flap extension (34') located face-to-face with and beneath the flap (12), and wherein the lining (22) has a lower flap extension (34'') located face-to-face with the flap extension (34') of the front pocket wall (11).

5. An article as claimed in claim 4, wherein the flap (12), the lower flap extension (34') of the front wall (11) and the flap extensions (28) and (34'') of the lining are all attached together at their lower ends, the lower flap extensions (34') and (34'') having an openable closure (40) formed therein for access to the interior (18) of the pocket.

6. An article as claimed in any preceding claim, wherein the pocket has a continuous rear wall (36) integral at its upper end with the flap (12) and at its lower end with the bottom of the front wall (11).

7. An article having a pocket comprising an opening (14) in a surface (2) of the article, and a

lining (22) forming a pocket bag within the surface (2) of the article, the lining having a flap extension (28) which extends outwardly through the opening (14) such that it can cover the opening, the upper end of 5 the flap extension (28) being attached by stitching (44) to the upper edge of the aperture (14), and means (46) being provided for waterproofing the line of attachment.

8. An article as claimed in claim 7, further 10 comprising a flap (12) attached to the surface (2) of the article above the opening (14) and arranged to cover the opening, the flap (12) being disposed above and face-to-face with the flap extension (28).

9. An article having a pocket comprising front 15 (11) and rear (36) pocket walls on a pocket bag attached to a surface (2) of an article, the front (11) and rear (36) walls being attached together along a line (52) of attachment, and the pocket further comprising waterproofing means (54) extending around 20 the line of attachment on the interior of the pocket to prevent ingress of moisture along this line, the pocket further comprising a flap (12) attached by stitching (8) above an upper entry (14) of the pocket so as to cover the entry, the flap having means (48)

for waterproofing the line of stitching at the underside of the flap (12) in order to prevent ingress of moisture along this line.

10. An article as claimed in claim 9, wherein  
5 the rear wall (36) and the flap (12) are integral.

11. An article as claimed in claim 9 or claim 10, wherein the front (11) and rear (36) walls are attached to the surface (2) along a line (50) of attachment which is different from the line (52) of  
10 attachment between the front (11) and rear (36) walls, and which is disposed outwardly thereof.

12. A method of forming the pocket of an article, the method comprising attaching together a pair of layers to form the front (11) and rear (36) walls of a pocket bag (10), turning the pocket bag inside-out and applying waterproofing means (54) around the line (52) of attachment to seal this line against ingress of moisture, turning the pocket bag the right way and then attaching the pocket bag to a  
15 surface (2) of the article along a second line (50) of attachment which is disposed outwardly of the first line (52) of attachment and along a lateral line at  
20 the top of the rear wall (36) so that an extension of

the rear wall (36) forms a flap (12) covering the pocket entry (14), and then sealing the lateral line of attachment using waterproofing means (48) along the underside of the flap (12).

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FIG.1(A).

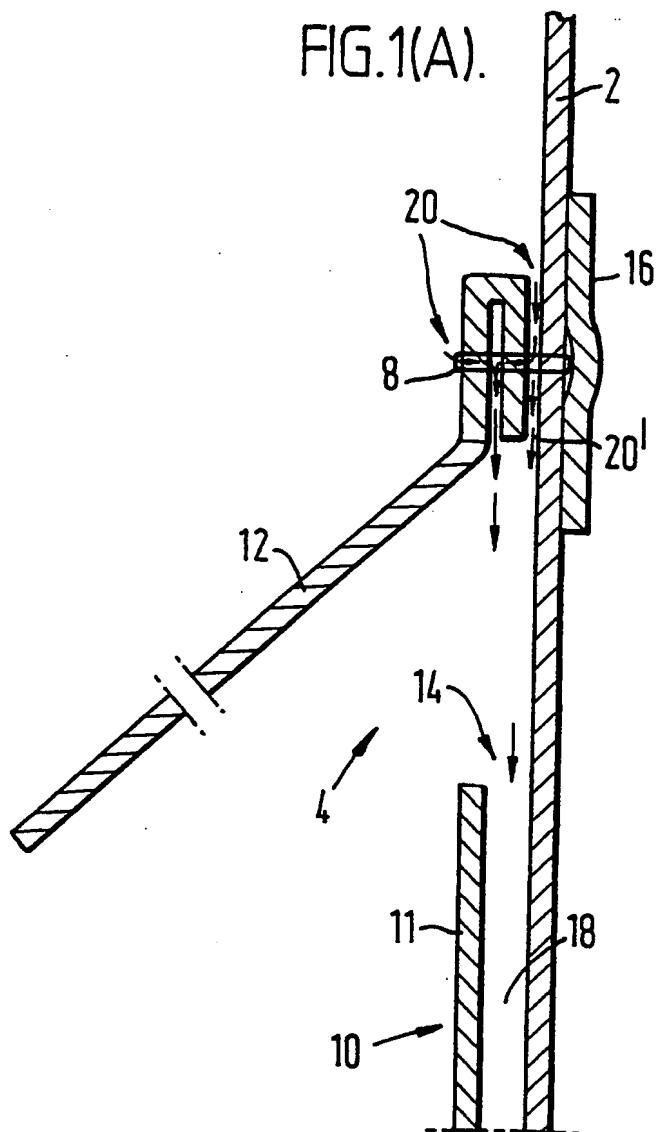
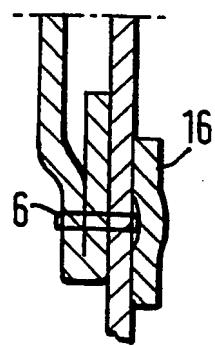
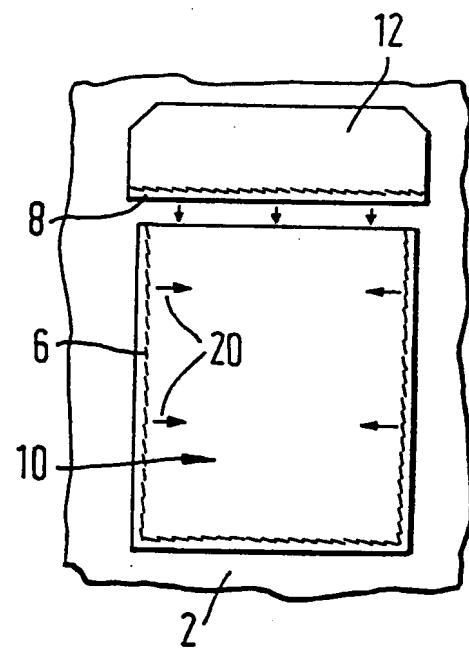


FIG.1(B).



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FIG. 2(A).

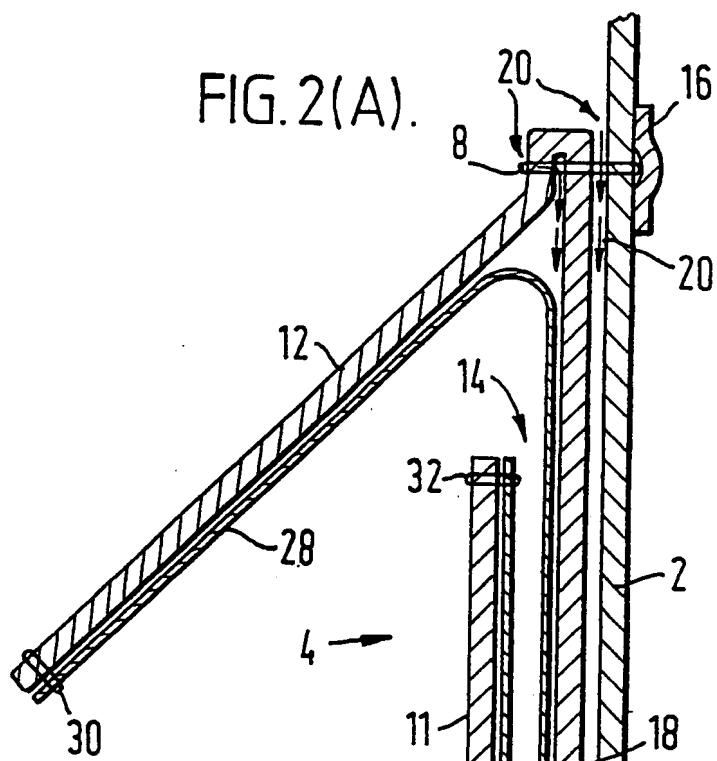
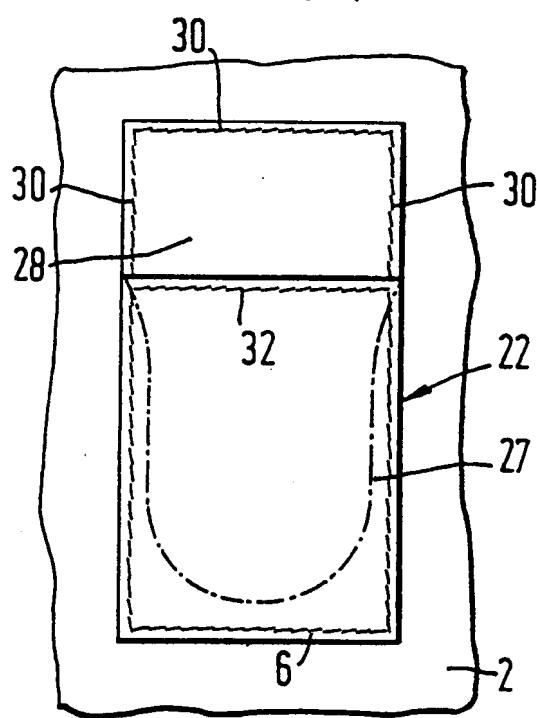


FIG. 2(B).



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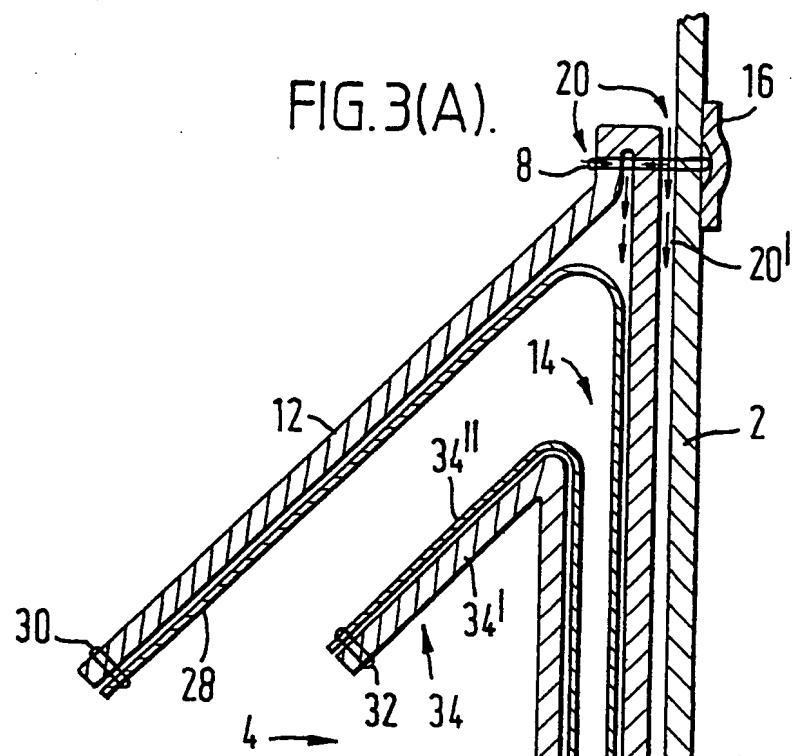
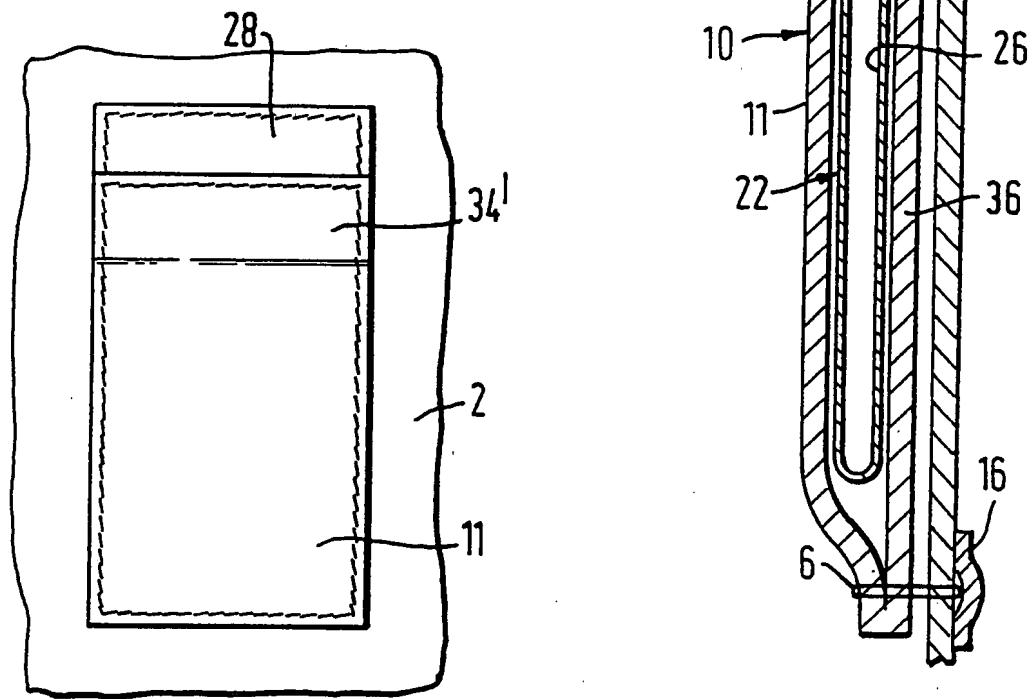


FIG. 3(B).



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FIG.4.

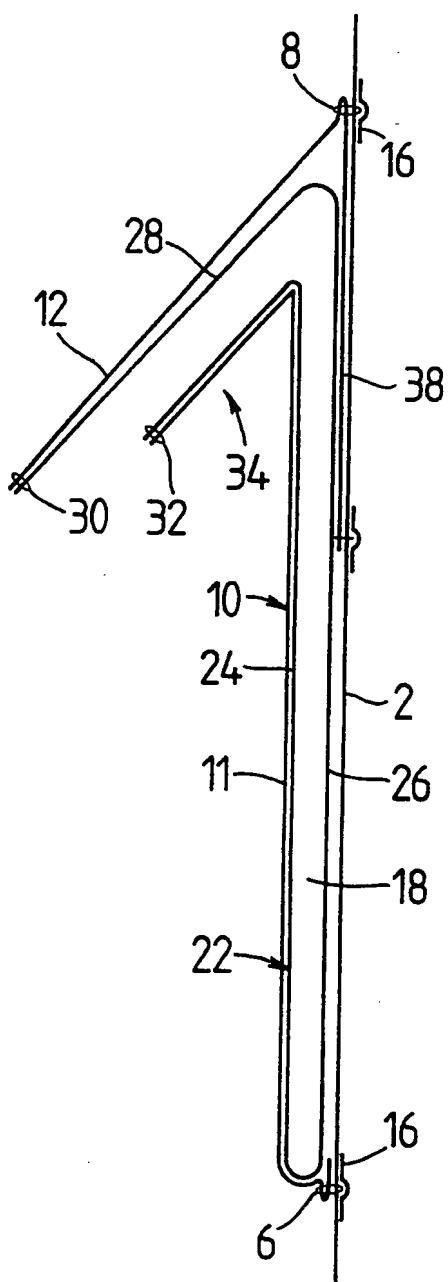
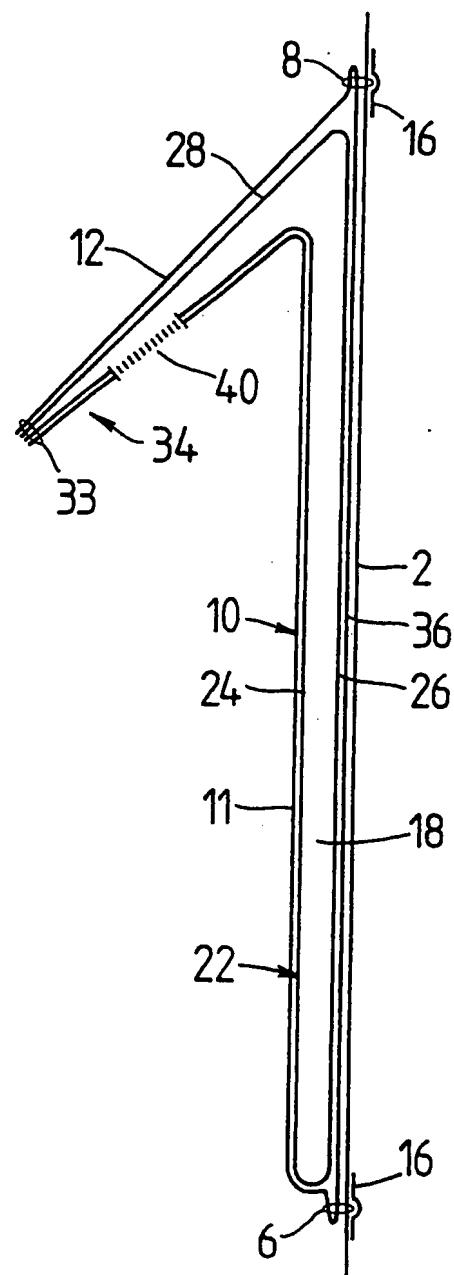


FIG.5.



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FIG.6.

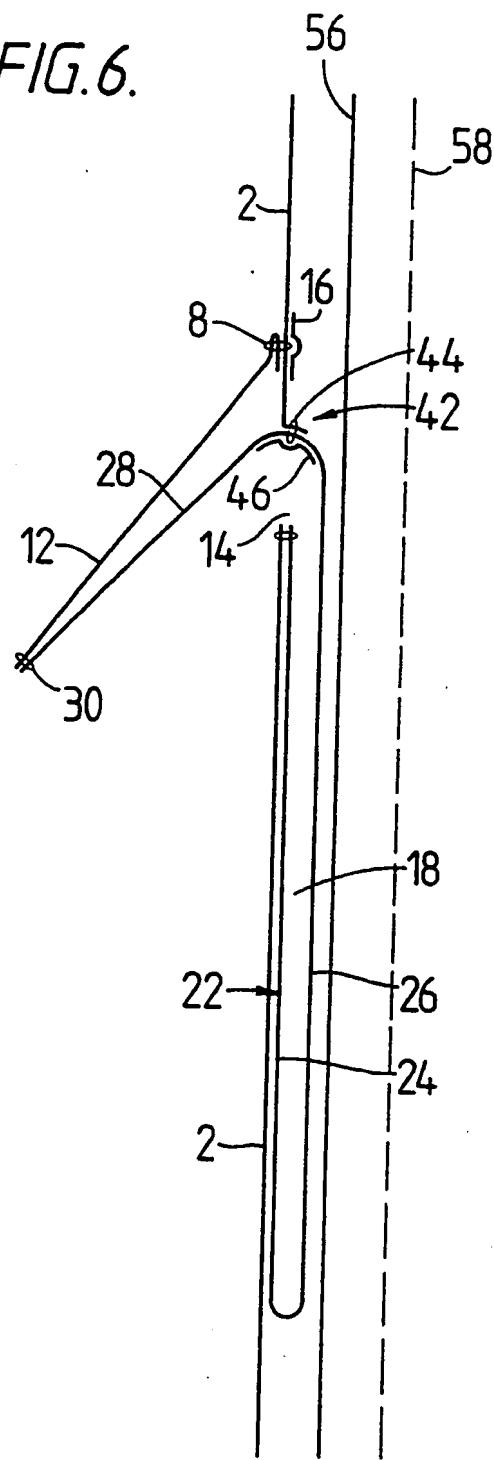
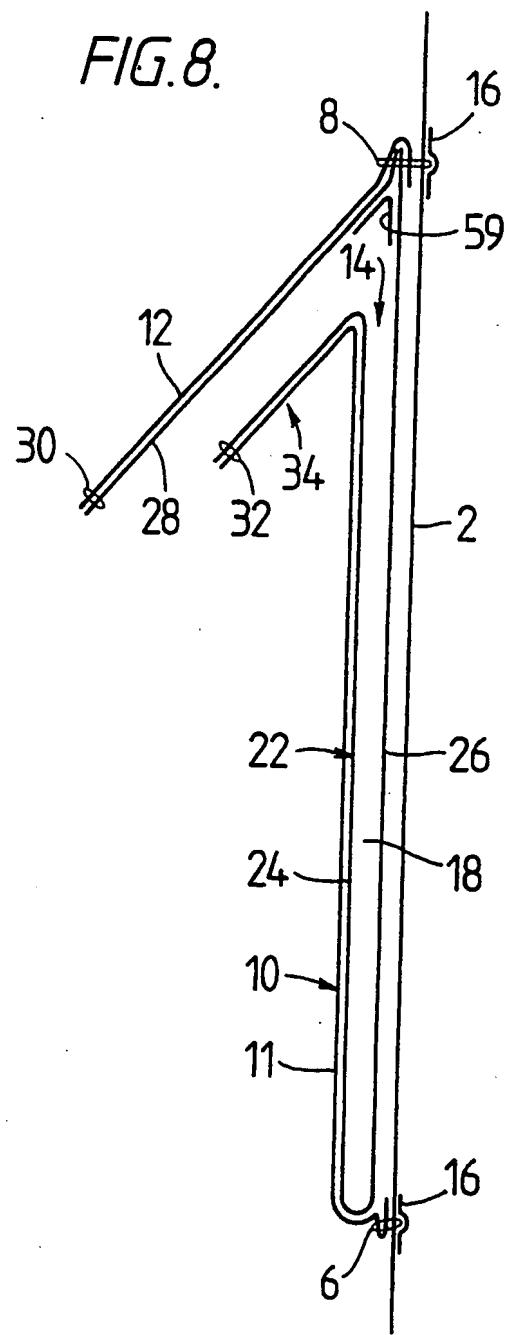


FIG.8.



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FIG. 7(A).

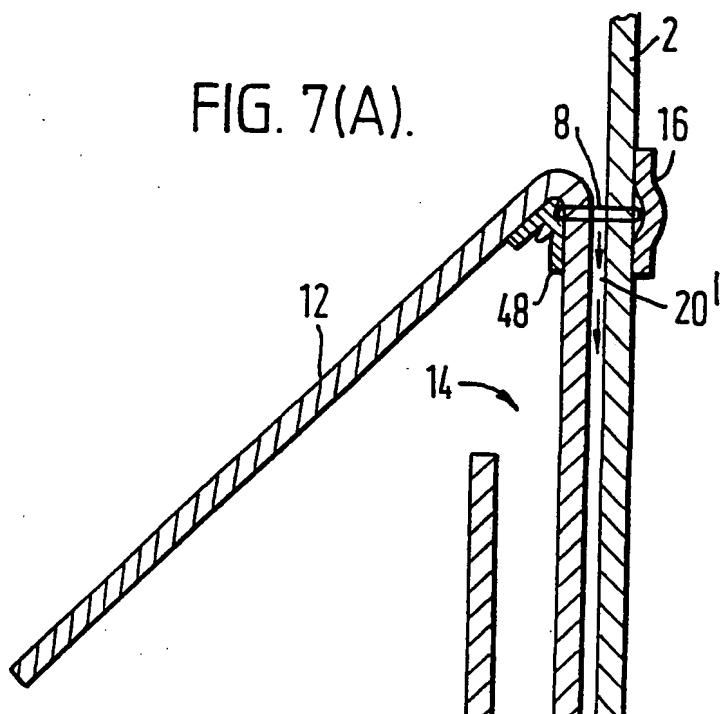
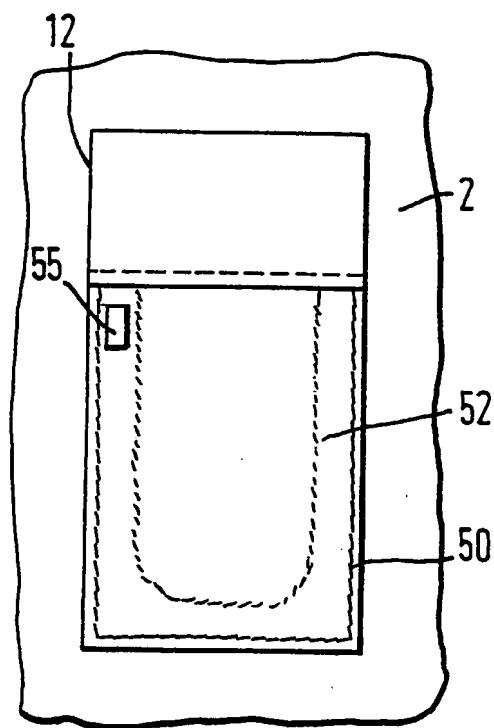


FIG. 7(B).



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FIG. 9(A)

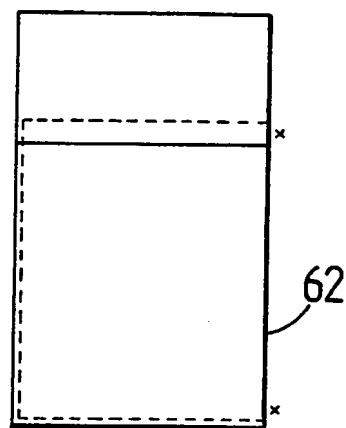


FIG. 10(A)

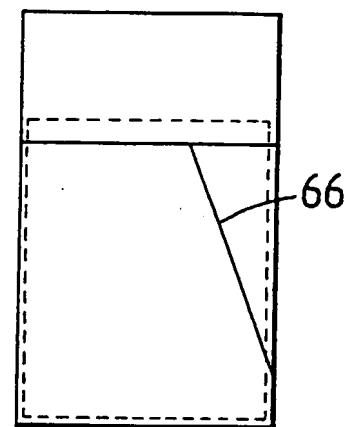


FIG. 9(B)

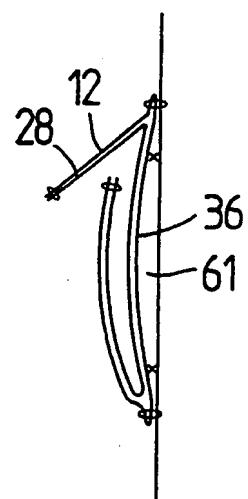
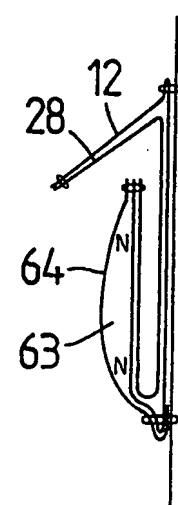


FIG. 10(B)



# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 92/01119

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC Int.Cl. 5 A41D27/00; A41D27/20		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
Int.Cl. 5	A41D	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup></b>		
Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	FR,A,1 140 684 (SOCIETE ESQUIMAU) 5 August 1957 see the whole document ----	1-4,7,9, 12
A	US,A,1 883 461 (J.P. BACCARO) 18 October 1931 see figures ----	1-12
A	DE,C,851 931 (G. GEHRMANN) 7 February 1952 see the whole document ----	1
A	US,A,1 574 077 (E. FRANTZ) 23 February 1925 see the whole document ----	1
A	DE,C,834 535 (H. MISTELE) 2 May 1951 see page 2, line 42 - line 93; figures 2,4 ----	9
* Special categories of cited documents : <sup>10</sup>		
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step		
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"A" document member of the same patent family		
<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
1 21 AUGUST 1992	09.09.92	
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EUROPEAN PATENT OFFICE	M. VANMOL	

ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO. GB 9201119  
SA 61065

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US-A-1883461		None	
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